ABSTRACT

AIM

The aim of the study is to assess the association between COL1A2 (PvuII) gene polymorphism and severity of dental fluorosis amongst patients attending the outpatient department of TNGDCH.

MATERIALS AND METHODS

The present cross sectional study was conducted among 120 participants (60 subjects with dental fluorosis and 60 controls) attending the outpatient department of TNGDCH by simple random sampling method. Informed consent was obtained from the selected participants. The details of their fluoride exposure and severity of dental fluorosis were recorded through a pre-validated customized questionnaire. Whole blood samples were collected from all 120 subjects and stored at 4^0 c till DNA isolation. The isolated DNA samples were subjected to PCR-RFLP procedure to assess COL1A2 (Pvu II) gene polymorphism. The obtained data were subjected to statistical analysis using SPSS version 17.Chi square test, Spearman's rank correlation test, ANOVA test were employed based on the nature of the data. Unadjusted odds ratio was calculated using multivariate logistic regression analysis with the level of significance at 5% and power of the study 90%.

RESULTS

Among normal and questionable group, only 1.9% had PP genotype, whereas in cases of dental fluorosis 28.4% of them had PP genotype. The genetic polymorphism in COL1A2 PvuII was found to be associated with the risk of dental fluorosis which was highly significant (p=0.000). The unadjusted odds ratio was 31.4 times [OR = 31.9, 95% CI: 3.9–48.7] higher for the homozygous PP genotype group in relation to the homozygous pp genotype group and 4.0

times [OR = 4.0, 95% CI: 1.0–10.7] higher for the Pp genotype. Genotypes of COL1A2 polymorphism were weakly correlated (r = 0.398) with severity grades of dental fluorosis

CONCLUSION

Genetic polymorphism of COL1A2 is found to be associated with dental fluorosis. This suggests that a new biomarker of dental fluorosis may be used to identify high-risk populations in areas with high levels of fluoride in the drinking water. Hence the present study provides an insight for identification of a subset of the population who may be at risk of developing dental fluorosis later in life and may ultimately be of value in planning early preventive strategies for dental fluorosis.

KEY WORDS: COL1A2 gene, dental fluorosis, fluoride, polymorphisms.